

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor: Bunker
Serial No.: 10/089,011
Confirmation #: 5289
Group Art Unit: 3683
Filed: March 25, 2002
Examiner: Siconolfi, Robert
For: METHOD AND APPARATUS FOR CONTROLLING A BRAKING
SYSTEM

REPLY BRIEF UNDER 37 C.F.R. § 41.41

Dear Sir:

Please enter this Reply Brief to the Examiner's Answer dated March 20, 2007. The arguments set forth in the Appeal Brief are maintained and amplified in this Reply Brief in view of the Examiner's elaboration of the rejection being appealed.

RESTATEMENT OF THE PRIMA FACIE CASE OF OBVIOUSNESS

In the final rejection of the claims, the prima facie case of obviousness has been constructed by inserting the electric actuator of Taig et al. into the hydraulic system of Bunker. The proposed braking system is predicated on the motivation of improving the performance of the Bunker system, which is allegedly lacking for pressure delay. See Office Action dated 04/11/2006, page 3, paragraph 4.

FIRST BASIS OF TRAVERSE: IMPROPER MOTIVATION

Applicant again submits that the art does not recognize a pressure delay between a hydraulic system and an electrical system and, therefore, there is no motivation to combine. The Examiner's Answer elaborated on the basis of the rejection applied in the Office Action dated 04/11/2006. For the first time, the Examiner explained that source of the alleged pressure delay in the hydraulic system of Bunker is that the transmission of pressure through an incompressible fluid would take longer than the transmission of an electronic signal.

The first problem with the Examiner's position is the lack of objective, supporting evidence. *Substantial* evidence is required to support a finding as to the principle or specific understanding within the knowledge of a skilled artisan that would have motivated the skilled artisan to make the claimed invention. In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000). In the present matter, the record is devoid of any evidence supporting the contention that one of ordinary skill in the art would view the system of Bunker as suffering a pressure delay, relative to the system of Taig et al. Not a single reference in the prior art of

record suggests, must less states, that hydraulic braking systems are perceived by those of ordinary skill in the art as suffering from pressure delay relative to electronic braking systems. Taig et al. does not tout itself as providing activation speed superior to a hydraulic system.

The second problem with the proposed motivation lies in the actual operation of an electrical braking system. Specifically, the transmission of an electrical signal is not the only event/process-step in electronically actuating a brake on a vehicle. Electronic signals must be processed pursuant to program logic, unlike the transmission of pressure through incompressible fluid. Taig et al. doesn't identify whether the electrical signal is analog or digital; however, if the signal is analog, the signal would have to be sampled over a period of time before being acted upon. Signal sampling would certainly delay actuation of the brake. In addition, the electrical signal does not impart physical motion to the brake piston on its own, unlike incompressible fluid. The electrical signal would be processed, resulting in a current through a motor and the generation of a magnetic field to rotate a rotor. The magnetic field will not induce immediate rotation in the rotor; rotational inertia must be overcome. With respect to the arrangement of Taig et al. in particular, rotational inertia of the numerous gears would also have to be overcome. Thus, electrical braking systems have sources of potential "pressure delay" that are not inherent to hydraulic systems.

The third problem with the proposed motivation is that any time difference between the transmission of a "braking signal" in an electrical system and in a hydraulic system is incalculable based on the record. The Examiner suggests that a "pressure wave" travels through the hydraulic fluid *at a speed several orders of magnitude slower* than an electrical signal. This contention has no basis in science and no support in the record of the present application. The Examiner should be obliged to identify the speed of pressure transmission in support of the prima facie case. The braking signal (electrical or "pressure wave") travels about 0.5 – 2 meters in a typical vehicle between a brake pedal pivot point or a controller to a wheel. Based on that distance, the "pressure delay" alleged by the Examiner would be on the order of nanoseconds (10^{-9}), not milliseconds (10^{-3}), even if the contention is correct. In view of the considerations set forth in the paragraph above, the sum total of "pressure delays" may result in the hydraulic system being faster. A time savings in signal transmission can be offset by delays associated with signal sampling, for example. The lack of any objective evidence in the record renders the entire discussion speculative.

SECOND BASIS OF TRAVERSE: REFERENCES TEACH AWAY FROM ONE ANOTHER

Applicant again submits that the references teach away from one another. The express disclosure of Taig et al. indicates that one of ordinary skill in the art was influenced at

that time by an "increasing emphasis on reducing [the] weight of vehicles and simplifying components thereof[.]" '073 patent, column 1, lines 11 – 15, hereafter the "cited text". Furthermore, an objective comparison of the braking arrangements provided Taig et al. and Bunker reveals that Bunker discloses a far simpler system. The system of Bunker has over a dozen fewer working parts to effectuate movement of the piston than the system of Taig et al. Applicant therefore submits that one of ordinary skill in the art, acting on the express teachings of the references and without the benefit of hindsight and/or the Applicant's disclosure, would reject Taig et al.'s electrical actuator in favor of Bunker's hydraulic system in view of Taig et al.'s express encouragement to pursue simplified components.

The Examiner appears to assert that the cited text indicates that Taig et al. provides the advantages of reduced weight and simplification based on the theory that aspirations of the prior art stated generally in a patent represent implied advantages of the invention set forth in the patent. The Examiner further asserts that because Bunker predates Taig et al. the cited text must be read to apply to Bunker specifically. In other words, because Taig et al. implies that it represents a simplified design, we are obligated to take the patent at its word relative to any braking system existing prior to Taig et al.

Applicant notes that the Examiner's position is not supported by the statutes, rules, caselaw, or the Manual of Patent Examining Procedure (MPEP). The objective evidence in the record demonstrates that the system of Taig et al. requires seventeen (17) working parts to move a piston 30 that are not required to move the piston 32 of Bunker. These seventeen parts are (1) a motor 40; (2) a motor housing 24; (3) a bearing (unnumbered) supporting (4) a rotor (unnumbered) of the motor 40; (5) a sun gear 52; (6), (7) a planetary gear carrier 60 with parts 61 and 62; (8), (9), (10) planetary gears 54, 56, 58; (11), (12), (13) three pins 63; (14), (15) ring gears 70 and 80; (16) a nut 90; and (17) screw means 88.

**Respectfully submitted,
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